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EXAMINER

PAIK, SANG YEOP

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WOLFGANG ADERHOLD, SUNDAR RAMAMURTHY, and
AARON HUNTER

Appeal 2009-003417
Application 10/788,979
Technology Center 3700

Decided: June 28, 2010

Before JOHN C. KERINS, STEVEN D.A. McCARTHY, and
MICHAEL W. O'NEILL, *Administrative Patent Judges*.

O'NEILL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Wolfgang Aderhold et al. (Appellants) seek our review under 35
U.S.C. § 134 of the final rejection of claims 1-5, 7-9, 12-15, 19, and 30-32.

Appellants have canceled claims 6, 10, 11, 16, 17, 18, and 20-29. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

Appellants' inventions are to methods and an apparatus for the heat treatment of semiconductor wafers. Spec. 1:2-3.

Claims 1 and 12, reproduced below, are illustrative of the subject matter on appeal.

1. A method of thermally processing a substrate in a reactor comprising a radiant heat source, comprising the steps of:

disposing a substrate to be thermally processed on a front side thereof facing downwardly to form features therein with a back side opposite said front side facing said radiant heat source; and

pyrometrically monitoring said front side of said substrate.

12. A thermal processing apparatus, comprising:
a radiant heat source for directing radiant energy downwardly;

means including an annular ring for holding a wafer with a back side thereof facing said radiant heat source, a front side of said wafer opposite said back side being processible in said thermal processing apparatus to form features on said front side; and

a reflector disposed on a downward side of said wafer to reflect back to said front side radiation produced by said radiant heat source and emitted from said front side, wherein said radiant heat source is disposed above said reflector.

The Prior Art

The Examiner relies upon the following as evidence of unpatentability:

| | | |
|--------------------------------------|--------------|---------------|
| Moslehi (hereinafter “Moslehi ’499”) | US 4,891,499 | Jan. 2, 1990 |
| Moslehi (hereinafter “Moslehi ’538”) | US 4,956,538 | Sep. 11, 1990 |
| Ballance | US 6,090,210 | Jul. 18, 2000 |
| Anderson | US 6,113,703 | Sep. 5, 2000 |

The Rejection

The following Examiner’s rejection is before us for review:

Claims 1-5, 7-9, 12-15, 19, and 30-32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ballance or Anderson in view of Moslehi ’499 or Moslehi ’538.

SUMMARY OF DECISION

We AFFIRM-IN-PART.

OPINION

Issue

In light of the Appellants’ contentions and the Examiner’s positions, the issues joined in this appeal are as follows:

Whether the Examiner has met the burden of setting forth a basis for rejecting the claims as obvious so as to put Appellants on notice of the reasons why Appellants are not entitled to patented claims with the claim scope sought.

Analysis

Method Claims

The Examiner has failed to meet the initial burden of setting forth a basis for the obviousness rejection of claims 1-5, 7, 9, 30, and 31. These claims are directed to methods of thermally processing a substrate in a reactor. The Examiner's obviousness rejection fails to point out where Ballance, Anderson, Moslehi '499, and Moslehi '538 describe each limitation of claims 1-5, 7, 9, 30, and 31. Ans., *passim*. Moreover, the Examiner's rejection fails to cogently explain how the disclosed structure within the combined teachings of Ballance, Anderson, Moslehi '499, and Moslehi '538 would perform the claimed steps within claims 1-5, 7, 9, 30, and 31. Thus, the Examiner has failed to meet the initial burden requisite for a conclusion of obviousness for the claimed subject matter within claims 1-5, 7, 9, 30, and 31.

Apparatus Claims

Claims 12 and 19

The Examiner has set forth findings and analysis sufficient to establish a prima facie case of obviousness for the subject matter called for in claim 12. Ans. 4.

Claim 12, properly construed, requires a thermal processing apparatus having a radiant heat source, means for holding the wafer with the back side of the wafer facing the heat source, and a reflector disposed below the heat source such that the front side of the wafer receives reflected radiation from the heat source by the reflector.

Ballance satisfies the structural features of claim 12, *viz.*, a radiant heat source, an annular ring wafer holder, and a reflector, wherein the

radiant heat source is disposed above the reflector and the wafer is disposed between the heat source and reflector. The RTP chamber 10 schematically shown in Figure 1 and described therein, in particular the support ring 18, is readily capable of holding a wafer 16 with its back side facing the radiant heat source 40. The only difference is essentially the orientation of the wafer relative to the heat source and reflector. In other words, the difference is the process of use, i.e., positioning the wafer in the RTP chamber. Claim 12 positions the back side of the wafer to face the heat source. Ballance positions the back side of the wafer facing the reflector. As such, the question becomes whether Ballance's RTP chamber can be used by having the wafer positioned with the back side of the wafer facing the heat source.

"It is well settled that the recitation of a new intended use for an old product does not make a claim to that old product patentable." *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997) (citations omitted). Although "[a] patent applicant is free to recite features of an apparatus either structurally or functionally ... choosing to define an element functionally, i.e., by what it does, carries with it a risk." *Id.* at 1478. As the court stated in *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971):

[W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

Where, however, the functional limitation in a claim expressly or impliedly requires a particular structure different from that in the prior art, the claimed subject matter is distinguishable from the prior art. *Cf. In re Casey*, 370

F.2d 576, 579-581 (CCPA 1967) (holding that a claim to “[a] taping machine comprising ... a brush ... being formed with projecting bristles which terminate in free ends to collectively define a surface to which adhesive tape will detachably adhere” is obvious over a prior art reference which taught a machine for perforating sheets, because “the references in [the claim] to adhesive tape handling do not expressly or impliedly require any particular structure in addition to that of [the prior art].”)

Here, nothing in Ballance precludes, in essence, flipping the wafer upside down such that its back side faces the radiant heat source 40 while the front side faces the reflector 28. Moreover, both Moslehi ’499 and Moslehi ’538 teach that it is known in the art to have the back side of wafers face radiant heat sources. *See* Moslehi ’499, col. 5, ll. 54-64 and Moslehi ’538, col. 6, ll. 33-36, fig. 2. Accordingly, the Examiner has provided ample reasoning to find that Ballance can be used with the back side of the wafer facing the radiant heat source

Appellants’ arguments fail to provide any reasoning to show that Ballance’s support ring is incapable of holding the wafer oriented with its back side toward the radiant heat source and the front side facing the reflector or that the Examiner’s reasoning to reach the legal conclusion of obviousness is flawed. While Appellants contend that the details of the support ring useful for the inverted wafer are missing (*see* App. Br. 5), for claim 12, the details of the support ring are not claimed. As such, Appellants’ arguments fail to persuade us that the Examiner made an error in either an underlying finding of fact upon which the conclusion of obviousness was based or the reasoning used to reach the legal conclusion of obviousness when rejecting claim 12.

Claim 19 falls with claim 12 because the argument is just a statement of what the claim recites. *See* App. Br. 9. Statements that merely point out what a claim recites are not considered an argument for separate patentability of the claim. 37 C.F.R. § 41.37(c)(1)(vii) (2009).

Claims 13, 14, 15, and 32

Based on the Examiner's analysis within the Answer, the findings are too sparse and conclusory to permit a conclusion that the claimed invention within these claims is rendered obvious by the combined teachings of Ballance, Anderson, Moslehi '499, and Moslehi '538. Claim 13 requires that the holding means overlaps the front side of the wafer only within the edge exclusion zone of the wafer. The combined teachings of Ballance, Anderson, Moslehi '499, and Moslehi '538 fail to expressly describe an annular ring, the holding means, only holding the wafer within the edge exclusion zone of the wafer.

CONCLUSIONS

The Examiner has failed to meet the burden requisite for a conclusion of obviousness for the claimed subject matter within claims 1-5, 7, 9, 13-15, and 30-32.

The Examiner met the burden requisite for a conclusion of obviousness for the claimed subject matter within claims 12 and 19 and the Appellants have failed to provide convincing reasoning that Ballance's support ring is incapable of holding the wafer oriented with its back side toward the radiant heat source and the front side facing the reflector.

DECISION

The Examiner's decision to reject claims 1-5, 7, 9, 13-15, and 30-32 is reversed.

The Examiner's decision to reject claims 12 and 19 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED-IN-PART

mls

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